Ex 2. Search.

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(FILE 'HOME' ENTERED AT 16:45:33 ON 11 MAY 2004)

FILE 'CAPLUS' ENTERED AT 16:54:04 ON 11 MAY 2004
L1 22 S (SELF(2W) ASSEMBL?) (3A) (PROTEIN (3W) POLYMER?)

=> d bib,abs 12,13,17-19

L1 ANSWER 12 OF 22 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:798035 CAPLUS
TI Self-assembly of functional mesostructures and discrete objects from synthetic polymers.
AU Jenekhe, Samson A.; Chen, X. Linda
CS Department of Chemical Engineering, University of Rochester, Rochester, NY, 14627-0166, USA
SO Abstracts of Papers - American Chemical Society (2000), 220th, PMSE-268
CODEN: ACSRAL; ISSN: 0065-7727
PB American Chemical Society
DT Journal; Meeting Abstract
LA English
AB Macromol. architecture and non-covalent forces play central roles in the hierarchical **self-assembly** of **proteins** and other natural **polymers** into complex mesoscopic structures in living systems. Although many synthetic polymers, such as flexible-coil block copolymers, can self-organize into segregated nanostructures and mesophases, they lack rigid sequences and well-defined intermol. interactions essential to controlling three-dimensional shape or for introducing functions in assemblies. We are exploring new structural motifs for designing synthetic polymer systems capable of hierarchical self-assembly into complex, well-ordered, functional mesostructures. Amphiphilic rod-coil block copolymers of diverse macromol. architectures have been synthesized and found to self-organize into ordered supramol. assemblies ranging from vesicles, microtubules, smectic layers, and periodic microporous solids to nanostructured thin films. Novel cooperative properties and tunable optoelectronic and photonic properties are obsd.These results demonstrate the potential of self-assembling polymers for engineering complex, functional, two- and three-dimensional periodic mesostructures or discrete objects.

L1 ANSWER 13 OF 22 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:332233 CAPLUS
TI **Self-assembled** structures from **protein-polymer** hybrids.
AU Hannink, Jurry M.; Cornelissen, Jeroen J. L. M.; Sommerdijk, Nico A. J. M.; Nolte, Roeland J. M.
CS Organic Chemistry, University of Nijmegen, Nijmegen, 6525 ED, Neth.
SO Book of Abstracts, 219th ACS National Meeting, San Francisco, CA, March 26-30, 2000 (2000), ORGN-108 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69CLAC
DT Conference; Meeting Abstract
LA English
AB Amphiphilic mols. (surfactants) are known to form a large variety of self-assembled structures in water, e.g. micelles, vesicles, rod- and sheet-like structures. We have extended this class of mols. by preparing protein-polymer hybrids which can act as "giant amphiphiles". These hybrids were obtained by complexation of biotinylated polystyrene to streptavidin. The latter protein consists of four identical subunits, each of which can bind one biotin mol. The affinity between streptavidin and biotin is so high (Ka.apprx.1015 mol-1) that the resulting complex can be regarded as irreversible. By allowing complexation of the biotinylated polystyrene to occur to only two of the four binding sites of the protein, giant amphiphiles were prepared, which form spherical aggregates on

dispersal in water.

L1 ANSWER 17 OF 22 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:204009 CAPLUS
DN 129:8481
TI In-situ **self-assembling protein polymer** gel systems for administration, delivery, and release of drugs
AU Cappello, J.; Crissman, J. W.; Crissman, M.; Ferrari, F. A.; Textor, G.; Wallis, O.; Whitledge, J. R.; Zhou, Xia; Burman, D.; Aukerman, L.; Stedronsky, E. R.
CS Protein Polymer Technologies, Inc., 10655 Sorrento Valley Rd., San Diego, CA, 92121, USA
SO Journal of Controlled Release (1998), 53(1-3), 105-117
CODEN: JCREEC; ISSN: 0168-3659
PB Elsevier Science B.V.
DT Journal
LA English
AB Sequential block copolymers consisting of tandem repetition of amino acids have been constructed and genetically produced based on the natural repeating structures of silk and elastin protein. Combinations of silklike and elastinlike amino acid sequence blocks in a high mol. weight protein polymer are used to confer properties similar to those observed with hard block and soft block segmented polyurethanes. A certain subset of these silk-elastinlike protein compns., termed ProLastins, will undergo an irreversible solution to gel transition in physiol., aqueous solution The transition occurs over time and can be controlled by temperature, solution conditions, and additives which either prevent or promote hydrogen bond-mediated chain crystallization The process involves no covalent crosslinking. Characterization of the gelling properties of various ProLastin compns. and their ability to release compds. which are incorporated directly into the gels are presented.
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 18 OF 22 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1996:416696 CAPLUS
TI **Self-assembly** of elastic **protein**-based **polymers** by the ΔTt-mechanism.
AU Urry, Dan W.
CS Laboratory Molecular Biophysics, University Albama, Birmingham, AL, 35294-0019, USA
SO Book of Abstracts, 212th ACS National Meeting, Orlando, FL, August 25-29 (1996), MACR-013 Publisher: American Chemical Society, Washington, D. C.
CODEN: 63BFAF
DT Conference; Meeting Abstract
LA English
AB Elastic protein-based polymers have their origin in the dominant repeating sequence of bovine elastin, (Gly-Val-Gly-Val-Pro)n. Reversibly, cyclic analogs crystallize and linear high polymers self assemble as the temperature is raised above a critical onset temperature, designated as Tt. Introduction of more hydrophobic residues lowers Tt and less hydrophobic (especially charged) residues raise Tt. Alternatively, numerous energy inputs change the transition temperature to drive self assembly or disassembly. This is called the ΔTt-mechanism. Increasing proton concentration protonates carboxylate side chains, dramatically lowers Tt and drives assembly. Similarly ion-pairing lowers Tt and drives assembly. Adding more hydrophobic phenylalanine residues raises the pKa of the carboxylates, lowers the pKa of amino groups and enhances ionpairing, as does stretching the hydrophobically assembled, cross-linked elastomer. Self-organization of a drug delivery vehicle at 37°C results from adding a cationic drug to an anion-containing polymer or an anionic drug to a cation-containing polymer

where the Tt before addition of the drug may be greater than 100°C. Similarly solns. of two polymers, one with cationic and the other with anionic side chains and both with Tt values much greater than the operating temperature, self assemble on combining the solns. Thus the ΔTt-mechanism becomes a basis with which to design polymers for self-organization.

L1 ANSWER 19 OF 22 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1994:631316 CAPLUS
DN 121:231316
TI Hierarchical and modulable hydrophobic folding and **self-assembly** in elastic **protein**-based **polymers**: implications for signal transduction
AU Urry, D. W.; Luan, C. H.; Peng, S. Q.; Parker, T. M.; Gowda, D. C.
CS Sch. Med., Univ. Alabama, Birmingham, AL, 35294-0019, USA
SO Materials Research Society Symposium Proceedings (1992), 255(Hierarchically Structured Materials), 411-22
CODEN: MRSPDH; ISSN: 0272-9172
DT Journal
LA English
AB When the hydrophobic (apolar) and polar moieties of elastomeric poly(peptides) are properly balanced, the poly(peptides) are soluble in water at lower temps. but undergo folding and assembly transitions to increased order on raising the temperature The temps., Tt, and heats, ΔHt, of these inverse temperature transitions are determined by differential scanning calorimetry for a series of elastomeric poly(pentapeptides) poly(Val-Pro-Ala-Val-Gly) (I), poly(Ile-Pro-Ala-Val-Gly) (II), poly(Val-Pro-Gly-Val-Gly) (III), poly(Ile-Pro-Gly-Val-Gly) (IV), poly[0.5(Val-Pro-Gly-Val-Gly),0.5(Ile-Pro-Gly-Val-Gly)] and poly[0.82(Ile-Pro-Gly-Val-Gly),0.18(Ile-Pro-Gly-Glu-Gly)] (V). On increasing the hydrophobicity as when replacing Val by Ile, which is the addition of one CH2 moiety per pentamer, the temperature of the transition is lowered by 15 to 20° and the heat of the transition is increased by more than one kcal/mol, for the above examples, by more than a factor of two. When differential scanning calorimetry thermograms are obtained on mixts. of I plus II, or III plus IV, the poly(pentapeptides) self-sep., i.e., they de-mix, even though in the latter case the conformations have been shown to be essentially identical before and after their resp. transitions. When the copolymer V is studied as a function of pH, increasing the degree of ionization is found to increase the temperature and to decrease the heat of the transition such that, with the correct balance of Ile with the variable glutamate carboxylate the values of Tt and ΔHt can be made to approach those of III. Acid-base titration studies indicate that less than one glutamate carboxylate in 200 residues can raise the value of Tt by 25° and decrease ΔHt by 90%. These and addnl. data are interpreted to mean that there exists an hierarchical hydrophobic folding, that the hierarchical hydrophobic folding can be modulated by changing the degree of ionization or by changes in a number of intensive variables, that changes in these intensive variables can be used to drive folding/unfolding-assembly/disassembly transitions under isothermal conditions, and that these unfolding/folding and disassembly/assembly transitions can be used to achieve signal transduction. This is called the ΔTt mechanism of free energy (signal) transduction.